MARINE REVIEW.

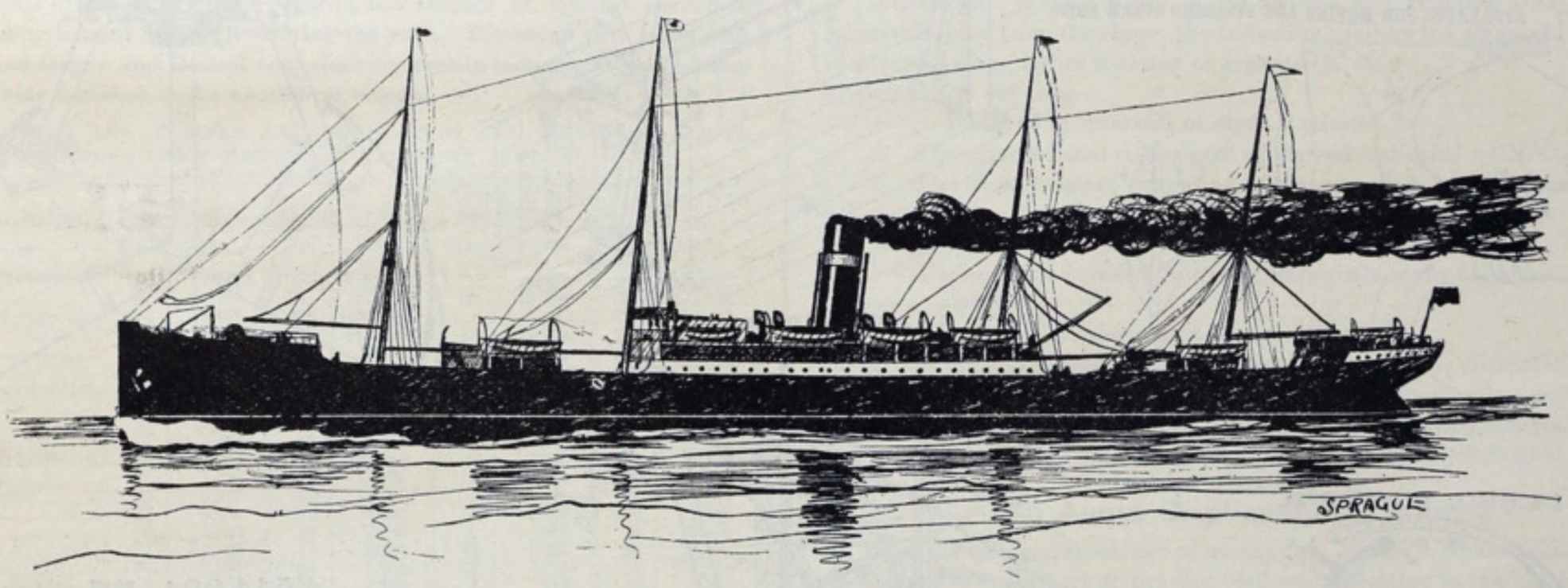
VOL. IX. CLEVELAND, O., AND CHICAGO, ILL., FEB. 22, 1894. No. 8.

International Company's Steamer Southwark.

The two American Line passenger steamers being built by the Cramps of Philadelphia are not the only big ships that are about to be introduced in the Atlantic trade by the International Navigation Company. Reference has been made in these columns several times to the steamers Southwark and Kensington, which have just been completed on the Clyde for the International company and which are named for districts in the city of Philadelphia. A picture of one of these vessels, (they are practically duplicates) the Southwark, appears on this page. The boats were built for the Philadelphia-Liverpool service and are the largest cargo steamers in the world.

The Southwark, built by William Denny & Bros. of Dumbarton, Scotland, is the first to go into commission. Between perpendiculars she measures 480 feet, in breadth 57 feet, and in depth 40 feet, with a gross registered tonnage of 8,606. The hull is subdivided by nine water-tight bulkheads and there are three complete decks, surmounted by bridge, poop and forecastle decks. The upper, main, and lower decks are of steel, sheathed with pine. A cellular double bottom extends the full length of the ship and is made available for water ballast. Although primarily designed for cargo carrying, the vessel has accommodation in commodious state-rooms amidships for 104 passengers, twelve first class and ninety-two second class. On the main deck accommodation is provided for 900 emigrants. The crew are provided with accommodation under the forecastle, and as it is also intended to carry at times some cattle, suitable quarters are set aside for cattlemen under the poop. For handling cargo with despatch, there are ten steam winches near the hatches, of which there are eight in all. The winches are worked in conjunction with 16 derricks, which average about 50 feet in length.

The twin engines are of the surface condensing, quadruple expansion type, and the cylinders in each have diameters of 25.5, 37.5, 52.5 and 74 inches respectively, the stroke being 54 inches. Steam is supplied from three boilers, two being double-ended and one single-ended, all designed to work at a pressure of 200 pounds per square inch. The two double-ended boilers are the largest of their kind ever fitted to an Atlantic steamer, each weighing upwards of 110 tons, exclusive of water, &c. This steamer and also the Kensington are fitted with Serve tubes and the Ellis & Eaves induced or suction draught (air heated by the waste gases,) for which Charles W. Whitney of 81 and 83 Fulton street, New York, is sole agent in the United States.



INTERNATIONAL COMPANY'S S. S. SOUTHWARK, LARGEST CARGO STEAMER IN THE WORLD.

Inland Marine Exposition.

The Cleveland chamber of commerce is planning a big celebration for 1896, the city's centennial year, and among the most important features of the proposed show is an inland marine exposition. As yet the preliminary preparations have not gone beyond committee work, but it is proposed to urge the completion of several important public improvements to be dedicated in 1896, and to otherwise make the year a memorable one. The plans are thus outlined in a report from the general committee having the scheme in hand:

"As the nucleus or center of interest for the occasion your committee is much impressed with the idea of an inland marine exposition. Without entering into the details of the enterprise we would respectfully submit that such an exposition more than anything else would prove a most novel, attractive and instructive object lesson of the leading factor in our prosperity—indeed, we may say its foundation stone and most substantial superstructure. Such an exhibition, while it may be kept within comparatively modest limits and might be housed in either one of our two new armories, could include models of craft from the ancient schooner to the modern steel steamship; the various labor saving appliances for the handling of coal and ore: charts and diagrams showing the growth of commerce on the great lakes; some representation of our fisheries, our life saving system and our light-house service; a naval parade and many other objects of the greatest interest and value. We believe that to this end not only the hearty co-operation of the various municipalities and commercial bodies along the line of the lakes could be enlisted, but by reason of the national, indeed the international character of the exhibition, substantial aid and interest could be secured from both the state and federal governments. Your committee will at an early date lay before you a plan of organization looking towards the carrying into effect of this suggestion."

Grummond's passenger steamer Atlantic will probably be converted into a barge during the coming summer.

Illustrated Patent Record.

SELECTED ABSTRACTS OF SPECIFICATIONS OF A MARINE NATURE—FROM LATEST PATENT OFFICE REPORTS.

514,509. STEAM ENGINE VALVE. William G. Shepherd, Erie, Pa. Filed March 20. 1893 Serial No. 466,927. (No model.)

Claim: In a steam engine, the combination of a valve C having double port passages, p and p' therein, relief plate C′ having like passages therein, bridges c^2 at the side of said passages having grooves c^3 and c^4 oppositely placed therein on the adjacent surfaces of the valve and relief plate respectively, packing strips c in said grooves, side seat and distance plate F, presser and distance plate F and presser plate G, that rides the plates F and F′, clamps the presser plate F in position and has passages s therein.

514,527. APPARATUS FOR MOVING AND STEERING STEAMSHIPS. Gustave Wauters, Grimberghen, Belgium. Filed March 3, 1893. Serial No. 466,755. (No model.)

Claim: In a propelling apparatus for vessels the main channel, the water forcing device therein, the lateral branches in rear of said forcing device, each of said lateral branches having divergent discharge openings directed forwardly and rearwardly and the single valve arranged at the junction of the divergent discharge openings and serving to control each of said openings.

514,661. BOAT'S DAVIT. Andrew R. Paul, San Francisco, Cal., assignor of one-half to Gus A. Paul, same place. Filed Aug. 9, 1893. Serial No. 482,756. (No model.)

Claim: An improved boat davit consisting of the guide brackets having one end secured to the rail and the other end secured to the deck of the vessel, and each bracket having a parallel guide slot and rack, the davits hinged at their lower ends and carrying a permanently lashed spar near the upper ends, means for suspending the boat, a shaft with gears at each end engaging the racks, a second shaft with pinions and crank for operating the gears, and the pins removably seated in the fixed guides so that they may be placed in front or behind the davits to lock them.

514,680. LIFE PRESERVER. Peter Hohmann, Stapleton, N. Y. Filed June 5, 1893. Serial No. 476,632. (No model.)

Claim: A life preserver consisting of an inflatable body, substantially U-shaped, having means for connecting the ends thereof, as the strap E and buckle F, and having a neck a, of a tube communicating with the interior of said body, the said tube being threaded at its outer end and provided with an interior, transverse wall, having a perforation, of a perforated disk in contact with the outer surface of said wall, and so adjusted that its perforation will coincide with said wall-perforation, and of a threaded cylinder, flaring at its outer end and having a perforated head at its inner end; said cylinder being adapted to enter the threaded end of said tube so that, when seated therein, its head-perforation will be closed by said disk.

514,788. DREDGING BUCKET. Thomas Symonds, Leominster, Mass. Filed Feb. 15. 1893. Serial No. 462,359. (No model.)

Claim: A dredging bucket, comprising in combination, the two-part bucket, a cylinder to which the two parts of the bucket are connected by links, a piston and operating devices connecting the piston to the bucket, and hoisting means connected to said piston whereby during the closing movement of the bucket the weight of the cylinder and all of its parts will operate to keep the bucket at the bottom.

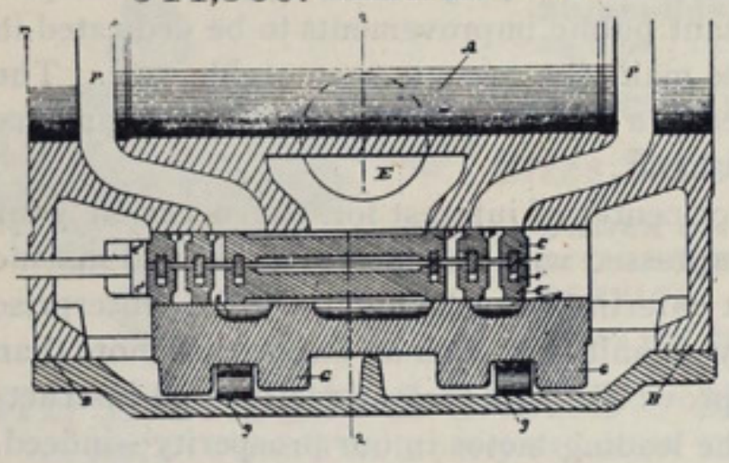
514,824. BOAT. Alfredo D'Costa Gomez, Bucaramanga, Columbia. Filed March 6, 1893. Serial No. 464,711. (No model.)

Claim: In the construction of a boat, a hull the same consisting of a bow section constructed of a series of hollow floats having pointed forward ends, and side sections constructed in like manner as the forward section, cross bars connecting the transverse series of floats, tie beams connecting the cross bars, and a well section located between the bow and side floats, the well section extending downward flush with the under faces of the floats, the lower portion of the well acting as a keel and providing a hold for the hull.

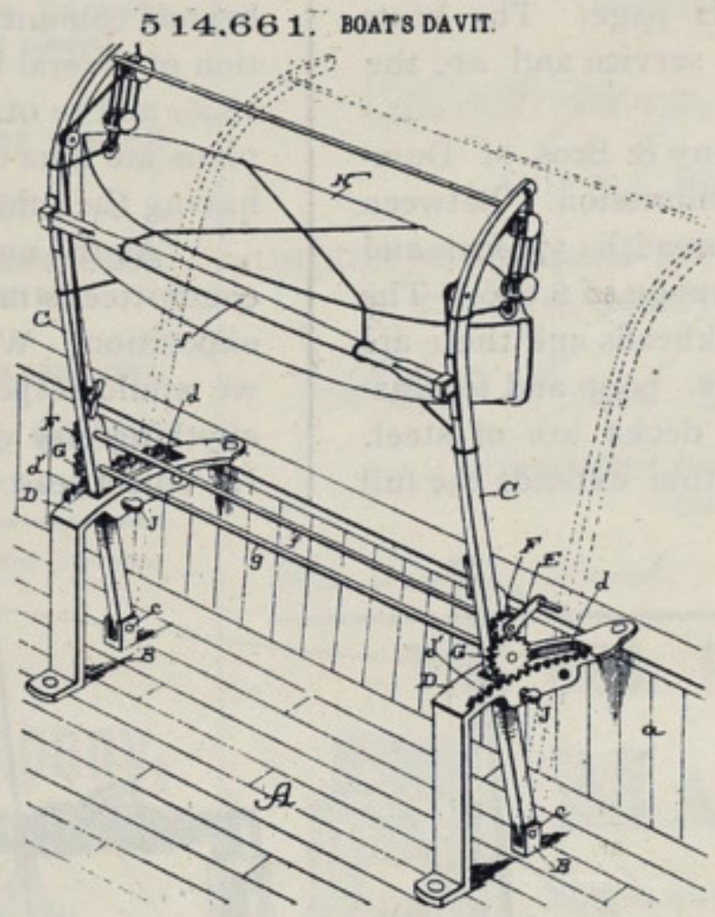
514,829. DREDGER. Samuel P. Hedges, Greenport, N. Y. Filed Dec. 20, 1892. Serial No. 455,834. (No model.)

Claim: In a dredger or like machine, the combination with a frame, a shaft journaled in an upright position in the frame, a crane secured to the upper portion of the shaft, braces connecting the crane with the lower portion of the shaft, and a lever pivoted to the braces and slotted to receive the shaft, of a brake mechanism consisting of a box located in the crane, carrying friction rollers and a pinion, a brake wheel connected with the pinion, a lever mounted upon the crane, a strap brake carried by the lever and engaging with the friction wheel, and a link connection between the upper lever and the main lever connected with the braces of the crane, and a dipper arm having a sliding movement in the box between the friction rollers and the pinion, the said dipper arm having a rack produced upon one face, engaging with the pinion.

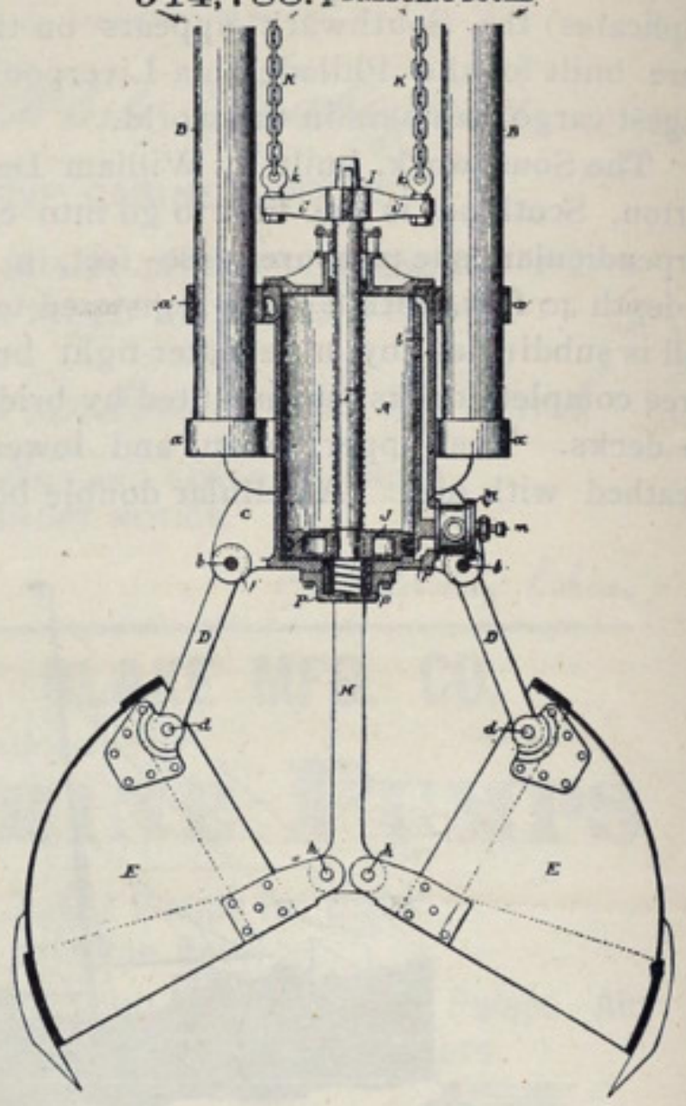
514,509. STEAM-ENGINE VALVE.



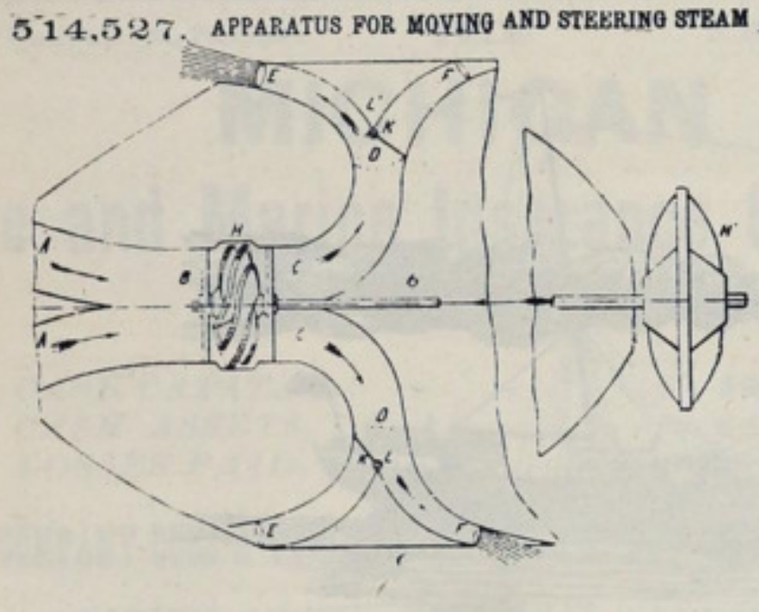
514,661. BOAT'S DAVIT.



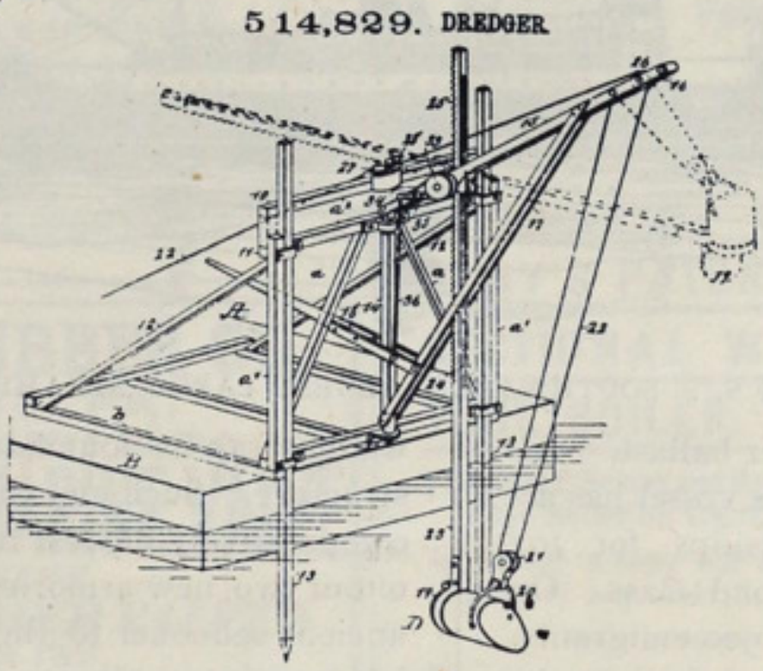
514,788. DREDGING-BUCKET.



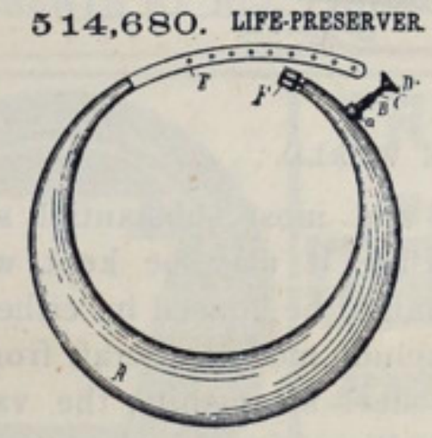
514,527. APPARATUS FOR MOVING AND STEERING STEAM SHIPS.



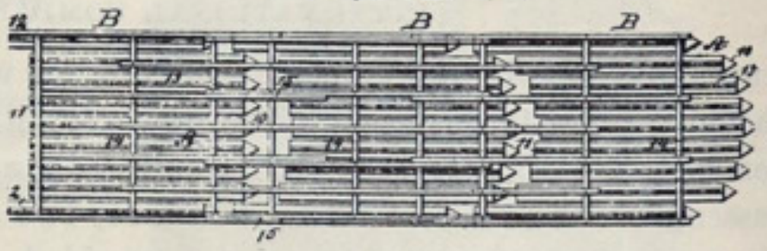
514,829. DREDGER.



514,680. LIFE-PRESERVER.



514,824. BOAT.



Where American Merchant Vessels are Owned.

Of twenty customs districts in the United States in which the ownership of vessel tonnage on June 30, 1893, exceeded 50,000 tons, eight were on the lakes. In steam tonnage, only one district in the United States, New York, exceeds Cleveland, while the amount of steam tonnage owned in Buffalo is greater than that of all districts excepting New York and San Francisco. The figures are from the latest report made by the commissioner of navigation. Each year the reports from the office of the commissioner show that the lakes are constantly gaining on other sections of the country in ownership of steam vessels of the finest and largest class. Eleven hundred and thirty-four steam vessels owned in the New York district have an aggregate gross tonnage of 441,265 tons, while 177 steam vessels owned in Cleveland (less than one-sixth of the New York number) have an aggregate gross tonnage of 183,346. The table that follows presents some interesting comparisons in this regard.

UNITED STATES CUSTOMS DISTRICTS IN WHICH THE OWNERSHIP OF VESSEL TONNAGE ON JUNE 30, 1893, EXCEEDED 50,000 TONS—LAKE DISTRICTS ARE MARKED WITH A STAR.

Customs Districts.	Sail Vessels.		Steam Vessels.		Canal Boats and Barges.		Total.	
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
New York	1,968	432,959	1,134	441,265	951	180,460	4,053	1,054,684
San Francisco	641	183,398	233	128,516	...	.....	874	311,914
Philadelphia	432	139,304	286	105,863	249	33,682	967	278,849
*Cuyahoga (Cleveland)	88	53,563	177	183,346	9	4,184	274	241,093
Boston	453	163,621	127	50,505	3	620	583	214,746
*Buffalo	30	14,980	217	127,070	85	30,266	332	172,316
*Huron (Port Huron)	250	75,747	216	93,390	...	.....	466	169,137
*Detroit	120	40,417	147	118,026	13	1,722	280	160,165
Baltimore	965	54,640	175	64,444	13	3,095	1,153	122,178
Bath, Me	177	102,362	39	7,385	8	10,252	224	119,997
*Milwaukee	242	33,619	154	62,124	...	.....	396	95,743
*Chicago	163	43,806	188	46,724	...	.....	351	90,530
Puget Sound	169	57,311	168	25,510	1	685	338	83,506
*Superior (Marquette)	44	11,570	112	52,693	2	2,622	158	66,885
New Haven	104	31,301	56	15,304	123	18,750	283	65,355
Portland, Me	214	48,772	36	14,434	...	.....	249	63,206
*Champlain	23	1,422	9	970	592	57,877	624	60,269
Fall River	68	25,137	21	28,967	11	5,468	100	59,572
Perth Amboy	281	22,789	57	9,163	69	23,010	407	54.962
Waldoboro, Me	305	48,276	13	2,169	2	171	320	50,616

Tonnage is in all cases gross registered tonnage.

The order of lake districts, as regards the amount of tonnage owned in them, has not changed materially during the year. Cleveland still leads with Buffalo, Port Huron and Detroit very close together in tonnage, although there is considerable variance in the number of vessels.

TABLE SHOWING THE NUMBER AND TONNAGE OF ALL VESSELS OWNED IN THE VARIOUS LAKE CUSTOMS DISTRICTS ON JUNE 30, 1893.

Customs Districts.	Sail Vessels.		Steam Vessels.		Canal Boats and Barges		Total.	
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
Cuyahoga (Cleveland)	88	53,563	177	183,346	9	4,184	274	241,093
Buffalo	30	14,980	217	127,070	85	30,266	332	172,316
Huron (Port Huron)	250	75.747	216	93,390	.....	.....	466	169,137
Detroit	120	40,417	147	118,026	13	1,722	280	160,165
Milwaukee	242	33,619	154	62,124	.....	.....	396	95,743
Chicago	163	43,806	188	46,724	.....	.....	351	90,530
Superior (Marquette)	44	11,570	112	52,693	2	2,622	158	66,885
Champlain	23	1,422	9	970	592	57,877	624	60,269
Sandusky	25	13,581	72	33,415	5	934	102	47,930
Erie	3	282	51	37,211	.....	.....	54	37,493
Michigan (Gr'd Haven)	119	9,037	176	23,244	5	1,048	300	33,329
Oswegatchie	7	1,627	25	17,974	14	2,944	46	22,545
Miami (Toledo)	22	6,947	51	12,605	.....	.....	73	19,552
Oswego	13	3,289	21	3,858	78	9,969	112	17,116
Niagara	9	3,903	14	7,600	2	916	25	12,419
Vermont	14	1,122	11	3,205	14	1.453	39	5,780
Cape Vincent	24	2,031	24	1,731	3	279	51	4,041
Duluth	3	130	45	2,495	1	110	49	2,735
Genesee	5	692	17	932	1	128	23	1,752
Dunkirk	1	24	4	89	1	124	6	237
Totals	1,205	317,789	1,731	828,702	825	114,576	3,761	1.261,067

Tonnage is in all cases gross registered tonnage.

Formation of Waves—To Lessen their Effect.

Notwithstanding the indifference with which the shipping world has taken the recommendations of scientists regarding the use of soapsuds in lessening the destructive effects of waves, the officers of the United States hydrographic service seem to attach great importance to reports of experts on the subject. A recent publication from the hydrographic office contains an article by G. W. Littlehales, one of the officers of the service, in which soapsuds is placed first among a number of liquids that are named in the order which corresponds to the quickness with which they spread on the surface of a body of water. The other liquids following in order are sperm oil, oil of turpentine, rapeseed oil, linseed oil, benzoin, ricinus oil, oil of almonds, oil of olives and petroleum. Of the substances named, petroleum spreads less rapidly than any of the others, its tendency to spread being only about one-half that of olive oil, one-third that of linseed oils one-fourth that of sperm oil, and one-fifth that of soapsuds. This explains, in large part, why seamen have found it inferior to the other oils, especially those of animal and vegetable origin, for calming the sea.

According to theory, of all the liquids named, soapwater is the best agent for preventing the growth of waves both on account of its superior spreading power and the reduction of the surface tension that it brings about. Since a course of practical experiments have led Dr. Koppen of Hamburg to recognize its superiority, seamen are asked to try the effect of solutions of various kinds of soap with fresh water, in proportions varying from $\frac{1}{40}$ to $\frac{1}{4000}$, upon stormy seas, and to report the observed effects to the hydrographic office in Washington. With respect to the oils, the table indicates that oil of turpentine is the best for spreading and reducing the tendency of the wind to form waves and increase their size. Moreover, oil apppears to have a great advantage over soap water, since it weighs less than water and does not mix with it. These qualities enable it, when spread over the surface of water traversed by waves, to maintain itself as a distinct layer whose particles do not take up the orbital motion that the particles of water have in sea waves. Much of the efficacy of oil is due to the formation of this distinct layer with a definite surface cohesion between the particles of oil, as the wave mechanism is then to some extent protected from derangement since in a sea wave the particles of water in the crest are moving forward in their orbits, or in the direction in which the wind is blowing, when they reach the surface, and the tractive effect of the wind, being brought to bear upon them at this point, causes the breaking of the crests and the consequent danger that is experienced in a stormy sea. It is not yet known whether soap water has any effect in lessening the breaking of waves, except that which it may exercise by preventing their growth, but mariners are urged to observe its effects, since it is upon their observations and the results of their practical experience that any improvement in the choice of a substance for calming the sea must finally rest.

New Code of Distress Signals.

The following from James A. Dumont, supervising inspector-general of steam vessels, explains itself:

Editor MARINE REVIEW: The board of supervising inspectors at their late meeting passed a resolution which will be printed in their rules and regulations, also in the pilot rules, recommending the use on all vessels, steam and sail, of the distress signals recommended by the late International Marine Conference, known as Article 31, as per press copy enclosed, which you may consider of sufficient interest to publish, as they will best become generally known in that way. Very respectfully, JAS. A. DUMONT.
Washington, D. C. Feb. 17. Supervising Inspector-General.

DISTRESS SIGNALS.

Article 31. When a vessel is in distress and requires assistance from other vessels or from the shore, the following shall be the signals to be used or displayed by her, either together or separately, viz:

Signals in the day time—

1. A gun fired at intervals of about a minute.
2. The international code signal of distress indicated by N. C.
3. The distant signal, consisting of a square flag, having either above or below it a ball or anything resembling a ball.
4. Rockets or shells as prescribed below for use at night.
5. A continuous sounding with a steam whistle or any fog signal apparatus.

Signals at night—

1. A gun fired at intervals of about a minute.
2. Flames on a vessel (as from a burning tar barrel, oil barrel, etc.)
3. Rockets or shells, bursting in the air with a loud report and throwing stars of any color or description, fired one at a time at short intervals.
4. A continuous sounding with a steam whistle or any fog signal apparatus.

To Avoid Duplication of Names.

That the new commissioner of navigation, Mr. E. T. Chamberlain, shows a disposition to at least try to prevent further duplication in the naming of merchant vessels, is shown by the following communication and copy of circular to collectors of customs:

Editor MARINE REVIEW: Enclosed please find copy of a circular letter issued to collectors of customs concerning the duplication of the names of vessels. It is believed that the voluntary action of those interested in shipping is the simplest, most expeditious and most satisfactory method of preventing the duplication of names, of which complaint has been made.

EUGENE T. CHAMBERLAIN, Commissioner.

DUPLICATION OF VESSELS' NAMES.

TREASURY DEPARTMENT, BUREAU OF NAVIGATION,
WASHINGTON, D. C., FEB. 17.

To Collectors of Customs and Others:

It is represented to this bureau that the practice of bestowing the same name upon different vessels leads to confusion and annoyance in the identification of vessels to the disadvantage frequently of the owners and masters of vessels, charterers, compilers of shipping news, underwriters and others that have to do with shipping matters. The matter is one which the owners and masters of vessels and those directly interested in shipping are most concerned and their voluntary action can correct the practice referred to more expeditiously and satisfactorily than statute. In first applications for marine documents in which it is desired to bestow upon a vessel a name already borne by one or more vessels of the same port or neighboring ports, collectors of customs are requested to bring this fact to the notice of the applicant to the end that the duplication of names may be checked by the voluntary action of those most concerned.

EUGENE T. CHAMBERLAIN, Commissioner.

Approved: W. E. CURTIS, Acting Secretary.

Ore Sales Market—Lake Freight Matters.

The sale of ore made several days ago by the company controlling the Norrie mine has not been followed by a general buying movement, and although it is probable that all of the ore sales agents of Cleveland have made trips to Pittsburg and other furnace districts within the past few weeks, with a view to "sounding" the furnace men as to next season's business, none of the extensive buyers have shown a disposition to talk of purchases. Sales during the past several weeks of small lots of ore on Lake Erie docks for immediate delivery have resulted in the Bessemer ores being practically sold up by nearly all agents, and in this there is some consolation, but the ore that is sold has not, of course, all been moved. The Carnegie company has not sought prices from producers, and the other large furnace companies also seem disposed to wait, notwithstanding the Norrie sale. Mr. E. C. Pope, Cleveland sales agent for the Norrie, says that his company has not as yet covered the ore which they sold by a lake freight contract of any kind, and he adds that they are not willing to sell to any great extent at $2.75, the figure at which the initial sale was made, unless other companies meet this price in large sales.

Vessel owners seem determined to refuse the 80-cent rate from the head of Lake Superior on contracts running to Oct. 15, and after a careful inquiry among both owners and shippers, it can be said, almost to a certainty, that M. M. Drake of Buffalo, controlling the steamers America, Brazil and Maytham, is the only vessel owner who is supposed to have as yet taken any ore to come from Lake Superior. He is understood to hold a claim against one of the ore companies for a balance on a contract of 28,000 tons at $1.05 carried over from last season, and is reported to have taken 30,000 tons additional for the new season at 80 or 85 cents. Even at 80 cents the two blocks of ore would average in the aggregate about 92 cents a ton freight, so that this is a transaction that can hardly be made a basis for new business.

Some of the soft coal dealers who have been figuring on a sale of coal to the Canadian Pacific Railway have asked for bids from vessel owners on carrying the coal to the head of Lake Superior, but the figures submitted to them, whatever they may have been, are of little importance, as in the absence of ore contracts vessel owners can not well afford to take chances on a low coal freight, and the coal dealers would figure on something like 40 cents. Some tonnage to arrive at Duluth for grain in the spring was taken last week at 2½ cents, and the whalebacks were reported to have been placed for 600,000 bushels, but it such a transaction was consumated it was done very quietly.

Corrigan Ives & Co. of Cleveland came into full possession of the Sunday Lake mine, another of the Schlesinger properties, a few days ago, and the sale of the mine to them at $75,000 was reported. The price reported is of little importance, as the Cleveland firm had virtually bought the mine some time ago at a very high figure when Mr. Schlesinger's financial operations caused them some annoyance.

Working Marine Engines at Reduced Power.

Late issues of English exchanges credit Messrs. Denny of Dumbarton, who are looked upon as the most scientific ship builders on the Clyde, with having constructed an engine of high power that can be made to produce half or lower power at a reasonable expenditure of fuel. Engines of this kind are wanted in vessels of war, in which an economical cruising speed is desired. The engines built by Messrs. Denny have been placed in a vessel called the Queen Olga, which was built for a Russian navigation company. An auxiliary cylinder is fitted, so that the vessel may work with triple expansion engines at 170 pounds pressure when developing the full power, while at reduced power, the fourth cylinder being introduced, the engine works under quadruple compound conditions. The cylinders are arranged as usual, but above the high pressure, and working tandemwise, is what is called the auxiliary cylinder. Like the high pressure cylinder, it is fitted with a piston valve, the spindle of which works with the piston valve of the high pressure cylinder. There is a bypass valve by which the steam is passed into the auxiliary cylinder or into the high pressure cylinder, as desired; and in the latter case the pressure on both sides of the piston in the auxiliary cylinder is the same, so that the piston is in equilibrium. But when the machinery is working on the quadruple expansion system, the steam passes through the bypass valve into the auxiliary cylinder, and thence successively through the other three cylinders. The auxiliary cylinder is 21 inches in diameter, the high pressure 28¼ inches, the intermediate 47½ inches, and the low pressure cylinder 76 inches, the stroke in each case being 54 inches. The engines have a type of valve gear which is now common to most of the Denny engines. It is operated by one eccentric, the rod working a rocking quadrant, the lap and lead being constant for all grades of expansion. Trials of the steamer, which is about 390 feet long, and has accommodations for 400 passengers, are entirely satisfactory to the builders.

A Strange Proposition.

Canadian newspapers are again discussing the construction of a 20-foot waterway between Chicago, Duluth and Montreal. This means, in other words, the enlargement of the Welland and St. Lawrence canals after the 20-foot channel between Duluth, Chicago and Buffalo is completed, two or three years hence by the United States government. One of the Toronto papers says that a waterway to Montreal similar to that now being constructed between Duluth, Chicago and Buffalo would be of vastly more importance to Canada than any benefit that might be derived from tariff changes. "When this question becomes a live issue, as it must before long," the article continues, "it will be discussed as an international problem and executed as such. There is no question of greater importance to Canada than the construction of a ship-canal to Chicago, unless it be the development of our mines."

This kind of reasoning is all right for Canada, but the drift of it is that the United States should bear the cost of building the proposed waterway to Montreal for the privilege of using it, a proposition that is hardly worthy of consideration.

Stocks of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store at the principal points of accumulation on the lakes on Feb. 17, 1894:

	Wheat, bu.	Corn, bu.
Chicago	20,868,000	4,728,000
Duluth	10,371,000	176,000
Milwaukee	862,000	.....
Detroit	1,742,000	13,000
Toledo	2,988,000	1,304,000
Buffalo	1,927,000	600,000
Total	38,758,000	6,821,000

At the points named there is a net increase for the week of 217,000 bushels of wheat and 155,000 bushels of corn.

St. Mary's Falls Canal Statistics.

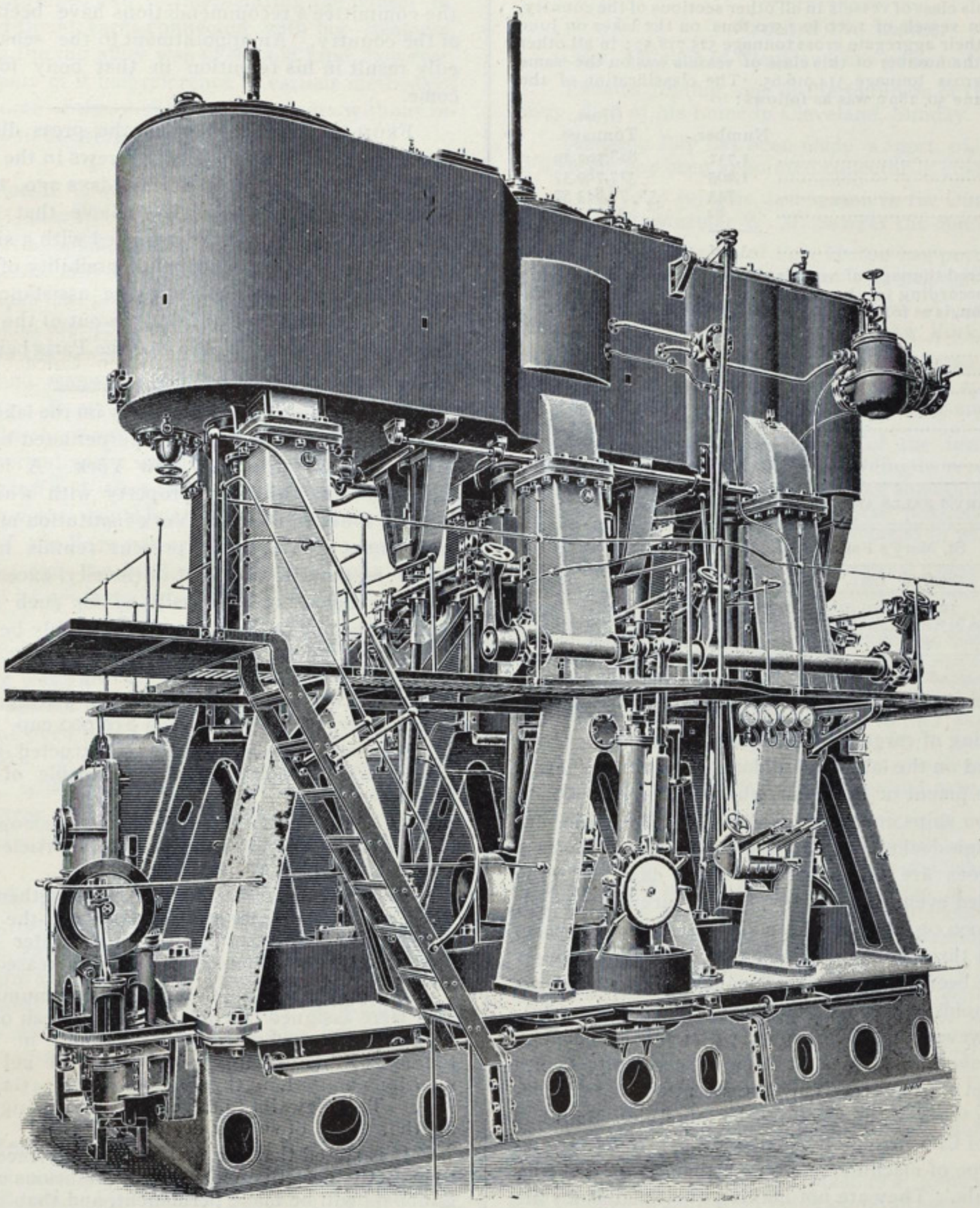
Gen. Poe is again sending out circular letters, as he has done for six years past, asking for information concerning freight rates on commodities carried through the St. Mary's Falls canal in 1893. All vessel owners should assist in this work, by filling out the blanks promptly and returning them to Gen. Poe. This matter was discussed at the last annual meeting of the Lake Carriers' Association, and it was agreed that, as the improvements at the canal, and in all other parts of the lakes in fact, have been brought about largely by the influence of these war department statistics, all vessel owners should help in the work.

Oil Carrying Steamers.

The illustration of triple expansion engines on this page is from Engineering of London, which has devoted considerable space in recent issues to a description of the oil carrying steamers Delaware and Lackawanna, built by David J. Dunlap & Co. of Port Glasgow for the Anglo-American Oil Company, Limited, the British corporation representing the Standard Oil Company. The vessels, which are each 345 feet long between perpendiculars, 44 feet beam and 31 feet 9 inches moulded depth, are specially constructed for carrying oil in bulk, and there is embodied in them all the advantages derived from experience in the construction of ships designed for the same trade in the past. The dead weight carrying capacity is 5,200 tons, 600 tons being allotted for coal, and the remaining 4,600 tons for the cargo of petroleum.

The oil pumping plant, which is a feature in a steamer of this kind, was constructed by the Snow company, well known in this country. The main pumps, of which there are two, are of the usual duplex type, each having two steam and two water cylinders, 14 inches in diameter, with a stroke of 12 inches, and a maximum output of fully 500 tons per hour. Thus, with the two pumps running, 4,600 tons of oil may be discharged in a little over four hours. In practice, however, this will never be attained, as it is customary, as soon as the forward tanks have been emptied of their oil, to commence filling them. This is the more likely course, as they are not infrequently refilled with sea water, which acts as ballast for the westward voyage. But even with this method of working, the whole cargo can be discharged and water ballast for the outward voyage pumped on board in from ten to twelve hours from the commencement of operations.

This ship propelling machinery, illustrated herewith, consists of a set of triple expansion engines having three cylinders, 27 inches, 43½ inches and 70 inches in diameter, respectively, with a stroke of 51 inches. The valve motion is of the usual link type, and all valve centers are in line with the cylinders. Liners are fitted to the high pressure and medium pressure cylinders, as well as to all valve faces. Piston valves are fitted to the high pressure, "trick" to the medium pressure, and double-ported to the low pressure cylinders, all having large steam openings. Steam is supplied by two boilers, each 14 feet 6 inches in mean diameter, by 16 feet 9 inches long, constructed of Siemens-Martin steel for a working pressure of 160 pounds per square inch. There are altogether twelve furnaces, the flues being of the Purves form. The horse power developed after a series of trials was 2,686, at 71½ revolutions, 163 pounds steam and 28¾ inches vacuum, and the speed 12.27 knots.



ENGINES OF AN OIL-CARRYING STEAMER.

MARINE REVIEW.

DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

Published every Thursday at No. 516 Perry-Payne building, Cleveland, O. Chicago office, (branch), No. 726 Phoenix building.

SUBSCRIPTION—$2.00 per year in advance. Single copies 10 cents each. Convenient binders sent, post paid, 75 cents. Advertising rates on application.

The books of the United States treasury department contain the names of 3,761 vessels, of 1,261,067.22 gross tons register in the lake trade. The lakes have more steam vessels of 1,000 to 2,500 tons than the combined ownership of this class of vessels in all other sections of the country. The number of steam vessels of 1,000 to 2,500 tons on the lakes on June 30, 1893, was 318 and their aggregate gross tonnage 525,778.57; in all other parts of the country the number of this class of vessels was, on the same date, 211 and their gross tonnage 314,016.65. The classification of the entire lake fleet on June 30, 1893, was as follows:

Class.	Number.	Gross Tonnage.
Steam vessels	1,731	828,702.29
Sailing vessels	1,205	317,789.37
Canal boats	743	76,843 57
Barges	82	37,731.99
Total	3,761	1,261,067.22

The gross registered tonnage of vessels built on the lakes during the past five years, according to the reports of the United States commissioner of navigation, is as follows:

	Number.	Net Tonnage.
1889	225	107,080.30
1890	218	108,515.00
1891	204	111,856.45
1892	169	45,168.98
1893	175	99,271.24
Total	991	471,891.97

ST. MARY'S FALLS AND SUEZ CANAL TRAFFIC.

	St. Mary's Falls Canal.			Suez Canal.		
	1892.	1891.	1890.	1892.	1891.	1890.
No. vessel passages	12,580	10,191	10,557	3,559	4,207	3,389
Ton'ge, net regist'd	10,647,203	8,400,685	8,454,435	7,712,028	8,698,777	6,890,014
Days of navigation	223	225	228	365	365	365

Entered at Cleveland Post Office as Second-class Mail Matter.

IN THE handling of cargoes of all kinds, excepting soft coal, the machinery used on the lakes will undoubtedly compare favorably with best equipment of docks anywhere else in the world. Three-thousand-ton ships are loaded with hard coal or iron ore from pockets in high docks in two to five hours, and in the case of ore such cargoes are taken out in a single day. Grain is loaded and unloaded even more rapidly, but the bituminous coal, of which about 3 000,000 tons has been shipped from Ohio ports in each of the past three years, is so soft that, although numerous attempts have been made to provide some means of dumping cars into the holds of vessels, none have proved successful. It is probable, however, that the coming season will see a change in this regard. Several machines for dumping cars direct into the hold of a vessel are now receiving the attention of manufacturers, and among them is one made by the McMyler Manufacturing Company of Cleveland. Pickands, Mather & Co. are interested in this type of machine, and one of them is now being put up at Ashtabula. They are not making great claims for the new device, but rapid work is undoubtedly expected from it. With improvement of the kind contemplated in this machine there will be little room left for any radical changes for some time to come in the matter of handling cargoes on the lake.

WITH a few unimportant corrections the stereotyped report of the formation of a company to build a ship-canal from Georgian bay to Lake Ontario is again being printed in lake papers. This time the report is based on the claim that application for a charter has been made to the Ontario legislature. The Hurontario canal project, as it is called, has many advantages and it may some day be taken up by the Canadian government, but as a business enterprise to be undertaken by private capital it is not worthy of consideration. No great amount of figuring is necessary to show that the financial question involved is an absolute hindrance to the scheme.

IT is to be hoped that Representative Blanchard of Louisiana will be appointed by Governor Foster of that state to fill in the United States senate the unexpired term of Mr. White, who has just been made an associate justice of the United States supreme court. He is talked of for the place. As chairman of the river and harbor committee in the last two congresses, Mr. Blanchard has shown a knowledge of the needs of shipping, and the committee's recommendations have been fair to all sections of the country. An appointment to the senate would undoubtedly result in his retention in that body for several years to come.

FROM the manner in which the press dispatches have laid stress on the advantage of twin screws in the steamer Paris after the accident to the rudder several days ago, the average reader of newspapers might be led to believe that the big American Line ship might as well be equipped with a single engine and a single screw, were it not for the possibility of meeting with accidents that would necessitate the assistance of two screws in steering. As a matter of fact, it is out of the question to think of the great power of a ship like the Paris being confined to one screw.

THERE is a grand opportunity on the lakes for some wealthy vessel owner to have his name perpetuated by a charity similar to the "Snug Harbor" of New York. A large proportion of the leases on the farm property with which Robert Richard Randall founded the New York institution many years ago will expire next month. The present rentals from the property, which is now in the heart of the city, exceed $300,000 a year, and the renewals of leases will be for such increased amounts that the income of the home will probably be doubled.

In General.

New York papers are talking of a steam yacht regatta for the summer, the trophy to be a $10,000 cup.

An electric crane recently constructed at the Homestead Steel Works, Homestead, Pa., is capable of carrying a load of 150 tons.

W. A. Dobson contributes to the Cosmopolitan (New York), for February, an elegantly illustrated article on the Designing and Building of War Steamers.

Work has been started on the lengthening of Mr. J. H. Wade's yacht Wadena of Cleveland at the Erie Basin, New York. The yacht was 147 feet on the water line and 165 feet over all. These dimensions will be increased 11 feet.

Among the vessels to which official numbers, signal letters, etc., were assigned last week by the bureau of navigation is the Dirigo, the first steel sailing vessel built in Maine. The gross tonnage of this vessel is 3,004.80 and the net 2,855.79. Her dimensions are: Length 312 feet, beam 45.15 feet depth 25.6 feet. The Sewalls, builders of the Dirigo, will put down another vessel of similar design.

It is stated that the stability board recently appointed to remedy the defective metacentric conditions of some of our new gunboats will be made permanent, and that one of their next duties will be to examine the U. S. S. Philadelphia on her return from Honolulu, as she has the reputation of being one of the most "cranky" ships in the navy and carries 300 tons more ballast than ships of her draft should require.

The scientific principle that a ship must displace a weight of water equal to her own weight was established ages ago. This principle was made use of by British ship builders of the seventeenth century, and then dropped out of fashion. Probably many have seen shipbuilding practiced in the rough and ready way—a model made, adjusted to suit the eye and taste of the designer; no calculation made for displacement to the intended load line, or some rude approximation by experiment with the model, or the use of coefficients. Such rules of thumb are superseded now by exact calculations made from drawings of ships.—W. H. White.

Tips From the Man on the Dock.

I fell in with a party of vessel captains a day or two ago in one of the Cleveland tug offices, and was reminded of the days when owners and shippers had their offices on the river and when yarns about quick trips and narrow escapes in big blows were spun during the long days of winter months. Some of the stories told in those days around the stove in the ship chandler's store, or some other popular resort, are repeated occasionally now with considerable interest, but there is less time and little disposition to indulge in such amusement since the season of idleness has been shortened and business during the winter increased by the additional cares connected with big steamers. The conversation in the tug office was of the old kind, however, and an interesting part of it had reference to various methods of stopping leaks in some of the old wooden schooners without incurring the expense of docking.

* * *

"I was one summer in a barge trading to Lake Huron," said a skipper who is now in charge of a big steel steamer, "and although we had little business with the lumber men, the boat was known at every saw mill on the west shore. Freights were somewhat better than in previous years, and time was too precious to be spent in dry dock. The old hulk was a veritable sieve, but thanks to the saw mills and barn yards, we kept her afloat all summer and managed to buy a slice in a steambarge the following spring. Every trip or two we would haul into shallow water on the shore and fill up the seams with saw dust or manure. The method was a simple one. A few bags would be filled with the stuff and after attaching lines to them a man on either side of the vessel would haul them, one at a time, under her bottom. One of the lines was so arranged that a jerk on it would untie the bag, and the suction under the vessel would draw a large part of its contents into the open seams."

* * *

According to the experience of this same captain temporary methods of stopping leaks are sometimes applied to the best of ships. "I know of several big steel vessels," he said, "that have made two, three and even half a dozen trips after striking and developing big leaks. It is not uncommon to put a patch of some soft material, with canvas or other covering, inside the water bottom and over a crack in the skin of a vessel, securing it by shores to the covering above the water bottom."

* * *

But it is not leaks of this kind that will cause vessel masters most anxiety during the coming season, if the conclusions of the party of story tellers here referred to are correct. The leaks in expenses, even to the smallest bills for provisions and supplies of all kinds, are, according to report, to receive the attention of owners to such an extent that the captain who has left such matters in the past to mate, engineer and steward may find himself in need of a small clerical force before the season is at an end.

The Belleville Water Tube Boiler.

John A. Courier, a marine engineer, writing from the Atlantic Works, East Boston, says of the Belleville boiler: "I have been shipmate with Belleville boilers for nearly seven years, and am chief engineer of a steamer having nearly 500 horse power, carrying 250 pounds of steam, and find the boiler as near perfection as anything made by man can be. I have been at sea on one run thirteen days, using salt water freely to make up for loss of water by use of direct steam for hoisting engine and other purposes, and have found an entire absence of scale or grease in the tubes, all the sediment passing to a receptacle provided for that purpose on the side of the boiler, in a cool place, where it is easily removed by taking off the handhole plate. The provision made for circulation and feed causes all solid matter to be deposited in this receptacle. In regard to weight and space there is a saving of 40 per cent. in 160 pounds pressure, and over 60 per cent. at 250 pounds over the marine shell boiler, and a large saving in fuel. In regard to safety nothing could be stronger, as the tubes are one-quarter inch thick, and the boilers have each been tested to 650 pounds hydrostatic pressure, every provision being made for expansion and contraction, and great care taken in fitting the joints. I never have had any leaks, and I have not as yet laid out a dollar for repairs; and now, after a thorough examination of the boiler, while we are making some alterations in the boat, I find everything as good as new, no signs of pitting or deterioration. If anything should happen to one of these boilers, the engineer can easily repair it at sea—not patch it, but make it good as new. I can take a section out into the fire room (where you can get all around it to work) in half an hour from the time the fires are extinguished."

Around the Lakes.

Capt. Thomas of Cleveland has gone to Florida.

Thomas Jopling, one of the founders of the Otis Steel Company, died at his home in Cleveland, Sunday.

Sturgeon Bay has been made a port of entry and C. M. Whiteside has been appointed collector of customs.

Capt. John Jenkins, last season in the Charles F. Eddy, will command the steamer W. H. Sawyer the coming season.

Capt. John Hayes of Port Huron has purchased part of the steamer Thomas D. Stimpson and he will sail her next season.

No dividend was declared by the American Steel Barge Company at the annual meeting in New York a few days ago.

Fayette E. Walworth has been appointed captain of the life saving crew at Ashtabula. Previous to his appointment he was for seven years a member of the life saving crew at Oswego.

A meeting of general agents of the insurance companies doing business on the lakes, according to report, be held in Detroit next week, with a view to doing something about a register for next season. It is not, of course, possible now to get out a new book with new ratings and changes in valuations.

Officers of the Merchants' Montreal Company, the Canadian corporation which has operated passenger and freight boats between Chicago and Montreal in past seasons, were in Toledo last week negotiating with flour dealers of that city with a view to running their steamers between Toledo and Montreal.

At the annual meeting of the Cuyahoga Transit Company, the corporation owning the steamer L. R. Doty and schooner Olive Jeanette, Charles J. Smith and H. B. Smith, both of Bay City, were elected president and vice president respectively, and W. A. Hawgood secretary, treasurer and general manager.

Macdonell & O'Connor of Port Arthur, who have been in communication with owners and vessel brokers around the lakes for some time past regarding the establishment of a vessel brokerage and marine insurance business at Port Arthur and Fort William, have issued a circular letter announcing that they have completed all arrangements for conducting such a business.

Recent transfers of vessel property at Grand Haven are: Propeller Arcadia, one-third interest from William Stark of Milwaukee to Henry Stark, $7,000; whole of same vessel from Henry Stark to H. Stark Land and Lumber Company, $21,000; propeller Fanny M. Rose, John Budge to R. B. Cobb and James Stokes, $3,069; one-half of same vessel, R. B. Cobb and James Stokes to James M. Bradley of Muskegon, $2,500; propeller Nellie, one-half, R. B. Cobb and James Stokes to James M. Bradley of Muskegon, $1,500.

The Vessel Owners' and Masters's Association is the name of a Chicago organization made up of owners and masters of vessels in the Lake Michigan lumber trade. One of the principal aims of the association during the coming season will be to regulate charges for loading and unloading lumber. With a view of securing reduced rates from the Chicago harbor tug companies, the association, at a meeting held a few days ago, resolved to request all vessels enrolled on its membership list to take no tug below Grosse point, Lake Michigan. If the tug companies are thus relieved of long tows, it is expected they will make rates accordingly.

Campania and Lucania.

The following from the Engineer of London would indicate that engineers of Great Britain as well as their brethren in other parts of the world are not inclined to enthusiasm over the performance of the costly Cunard liners Campania and Lucania:

"These vessels have already been sufficiently long on their station for a fairly correct notion to be formed on their average performance, and superiority over all other competitors. In the first place, it will be noticed that the gain in speed though apparrently trifling on paper, say of one knot, has only been secured by a very great increase in size and power, and that this increase has been strictly in accordance with Froude's law of similitude. In popular language Froude's law may be stated thus: 'One per cent. increase of speed over a given voyage—Queenstown to New York—requires 2 per cent. increase in length, 6 per cent. increase in displacement, and 7 per cent. increase in horse power and daily consumption of fuel; though only 6 per cent. increase of fuel for the whole voyage.' Thus if an enlargd Paris is required to cross at 21 knots, an increase of 5 per cent. over the 20 knots of the present Paris, 560 feet long, of 10,000 tons displacement, and 20,000 horse power, means that the enlarged vessel must be 10 per cent. longer, or 616 feet long. She must have 30 per cent. more displacement, or displace 13,000 tons, and have 35 per cent. more power, or 27,000 horse power; and here we have as near as possible the dimensions of the Campania and Lucania. The bunker capacity must be raised proportionately to the displacement, or from 2,500 tons to nearly 3,000 tons, but the coal shoveled daily must be raised from 300 to over 400 tons. A high pressure, too, must be carried, 10 per cent. greater if the engines are to scale, but the boilers will have to be increased in size and number beyond the increase in geometrical scale, or the performance on trial will be a disappointment.

"But it will be urged that we are under-estimating the speed of the vessel, as the record of the westward voyage is now nearly 5 days 6 hours, which on a course of 2,772 miles from Queenstown to Sandy Hook, works out to a speed of exactly 22 knots. It is the fact, however, though generally suppressed, that these 5 days 6 hours, or 126 hours, are false hours—short weight hours, although longer—because five hours have been deducted for difference of longitude. Adding these five hours, 131 true hours have been occupied on the voyage, and the true speed through the water sinks to 2,772÷131, or 21.18 knots. A 21-knot vessel will occupy 132 true hours and 127 false hours, deducting five hours for difference of longitude, although four and a half is all that is allowable between Queenstown and Sandy Hook, so that the speed is jockeyed in this manner up to 21.83 knots. The "clockers" of the record passages never add the five hours' longitude difference on the return eastward passage when the vessel is running against the sun, but allow themselves the 'turn of the market.' For this reason the times of the eastward passages are a better speed record, though here the advantage of a wind, which is generally favorable, is to be reckoned with. If ever Dr. Lardner's scheme of an express Atlantic service between Galway and Halifax should be revived, the reduction of the distance to about 2,000 miles, still with the same longitude difference of nearly five hours, would emphasize this apparent increase of speed and lead to rather astonishing results of sustained sea speed."

The New Goodrich Boat.

Capt. J. W. Gillman, superintendent of the Goodrich Transportation Company, says in a letter to the REVIEW: "It is the intention of this company to build a boat after the style of the steamer Indiana or Virginia—single screw and probably 30 or 40 feet longer than the Indiana. The contract will be let some time this spring at either Detroit or Cleveland. The probability is that the boat will be of steel."

River Boats for Guatemala.

E. J. Howard, builder of river steamers at Jeffersonville, Ind., is at work on a steamer and barges for service in Guatemala. The steamer is of the stern wheel type, is 90 feet long, 20 feet beam and 4 feet hold. She will have two high pressure engines, 10 inches diameter and 4 feet stroke, and two boilers, 16 feet long and 40 inches diameter. She will have a deck over the machinery, but no cabin until she reaches Central America. The barges are 80 feet long, 18 feet beam and 3½ feet hold, decked over. The boats will be sent direct from the mouth of the Mississippi to some point in Yucatan and then follow the coasting route.

Steam Pressure in Water Tube Boilers.

The report that adverse action had been taken by the supervising inspectors of steam vessels in regard to pressures allowable on water tube boilers is without foundation. Gen. Dumont says that no action was contemplated or taken on this subject other than as determined by the hydrostatic pressure applied, which is double the steam pressure. Except in cases where large steam drums of riveted plates are used, boilers will be allowed steam pressure of two-thirds the hydrostatic pressure, on certification that the pipes or tubing have been properly tested previous to construction of boiler.

Trade Notes.

The Roberts Safety Water Tube Boiler Company reports business brisk. The company's works is running full time with the usual complement of men. This is one concern that is not complaining on account of hard times.

Mr. Johnston of Crawley & Johnston, Cincinnati, O., builders of steering gear, measured the Geo. H. Dyer at Buffalo recently, for one of their new gears. The one that was put in the J. B. Lyon last year is giving satisfaction.

It is estimated that the loss on the very large part of the ship building plant of the Bath Iron Works, Bath, Me., which was destroyed by fire last week, will be more than $100,000. There is talk of the company building a new works at Norwich, Conn.

One lake steamer, the passenger steamer City of Lowell, a steamer for the Portsmouth and Isle of Shoals line, steamer Pokanoke and the New York tug boat W. H. Bentley have all been furnished recently with life boat, life preserver or raft outfits by Thos. Drein & Son, Wilmington, Del.

Davis & Son, Kingston, Ont., are engaged in the construction of twelve pleasure yachts of lengths varying from 22 to 43 feet and have already completed the building of four such vessels this season. All these yachts are to be propelled by the Sintz oil gas engine, of which Davis & Son are the Canadian agents.

Horace See of No. 1 Broadway, New York, has just issued a circular containing the names of fifty merchant vessels, vessels of war and steam yachts on which his hydro-pneumatic ash ejector has been adopted. The two big ships of the White Star line, Civic and Gothic, several of the Morgan line boats and the latest steamer built for Long Island sound service, are fitted with this device, which was described in a recent issue of the REVIEW.

Doty Bros. & Co., Toronto, are placing new compound engines in the steam tugs Queen and Armstrong now undergoing repairs at Wiarton, Ont., and the work of lengthening the steamer City of Midland, now being done at Collingwood, Ont., is nearly completed. This firm is building the compound engine for a tug being built for Mr. H. McGinnis, at Collingwood, Ont., and they are also building Finlayson water tube marine boilers for a new steamer now being erected in Collingwood.

Miscellaneous Mention.

It is reported that the steamers Ohio, B. W. Blanchard and John Pridgeon will run the coming season between Duluth and Ogdensburg in a new line.

C. W. Elphicke of Chicago is thus quoted on the subject of an Inland Lloyd's Register for next season: "I am not in favor of issuing a vessel register the coming spring. We can get along with an old book by marking down valuations from 20 to 25 per cent. There will certainly be that much depreciation in vessel property since a year ago, and underwriters must avoid making it to the advantage of any one to lose their boats, either through accident or design. The valuations must be nearer the true value than they have been."

Yarrow & Co., the British ship builders who constructed the torpedo boat destroyer Havock, first of the new type of war vessel, of which the English government is building about thirty, are about to put a second boat in commission that will show increased speed. The second boat is called the Hornet, and she is fitted with Yarrow water tube boilers instead of the ordinary locomotive type of torpedo boat boiler. On a recent trial with half power, only four boilers out of eight being in use, the Hornet attained a speed of 23 knots.

Photograph of Your Steamer.

We have one photograph of each steamer named below and will send them to any address for 75 cents each, or $1 for two to the same address. The size is 9 by 7 inches, mounted on cards of 11 by 14 inches. They are well worth the money. Address the MARINE REVIEW, 516 Perry-Payne Building, Cleveland, O:

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Lycoming, Tioga, S. S. Curry, Louisiana, W. M. Egan, Onoko, Albany, Viking, C. F. Bielman, Topeka, Minnesota, S. C. Baldwin, America, Wissahickon, City of Fremont, Saml Mather, Merrimac, Milwaukee, Panther, Edward Smith No. 1.
J. C. Perrett, Geo. Smith, F. S. Vance, Lawrence, Indiana, Thos. Maytham, Philadelphia, Sachem, Florida, R. P. Flower, Conestoga, Russia, St. Lawrence, Neosho, Gladstone, Caledonia, Rosedale, Helena. Italia,

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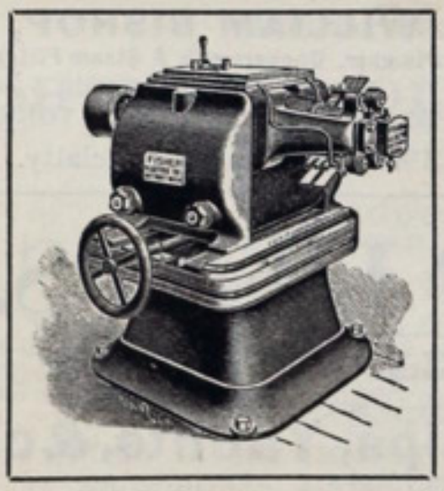

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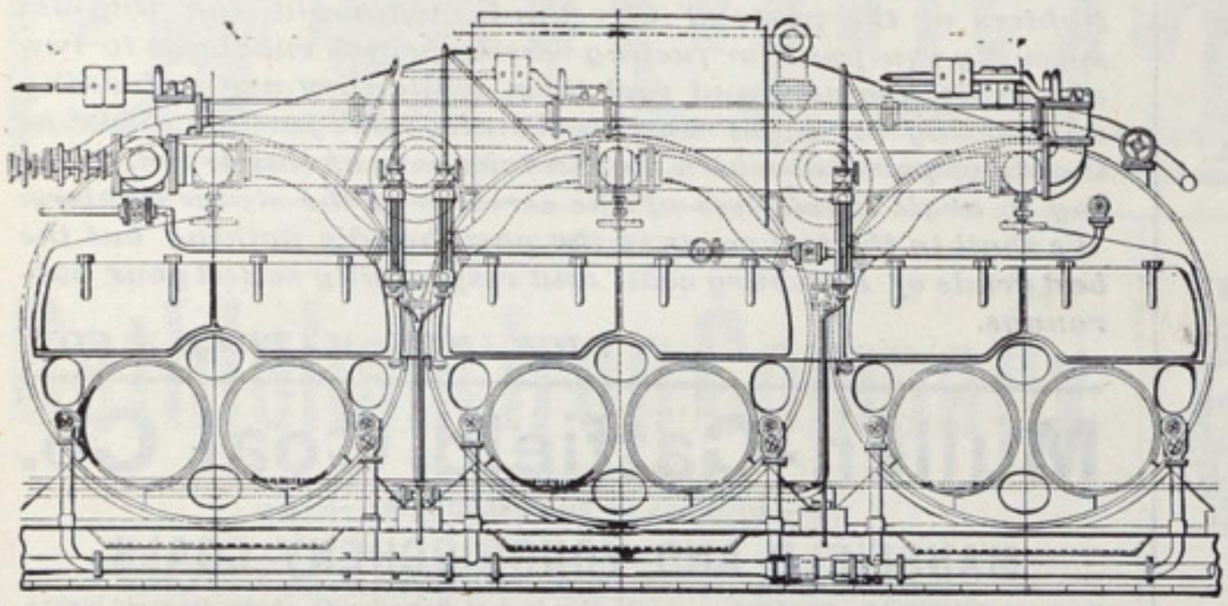

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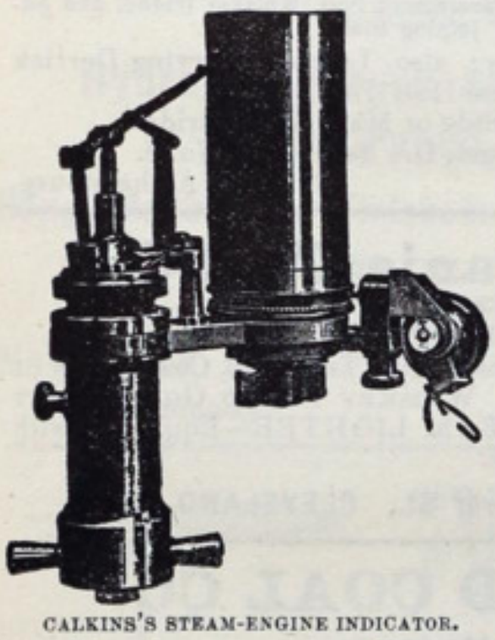

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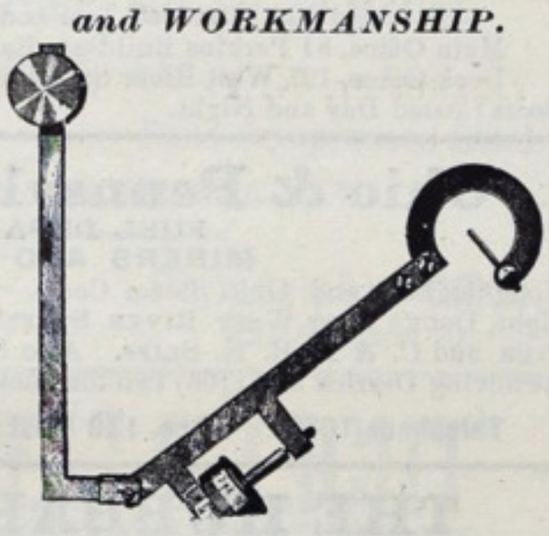

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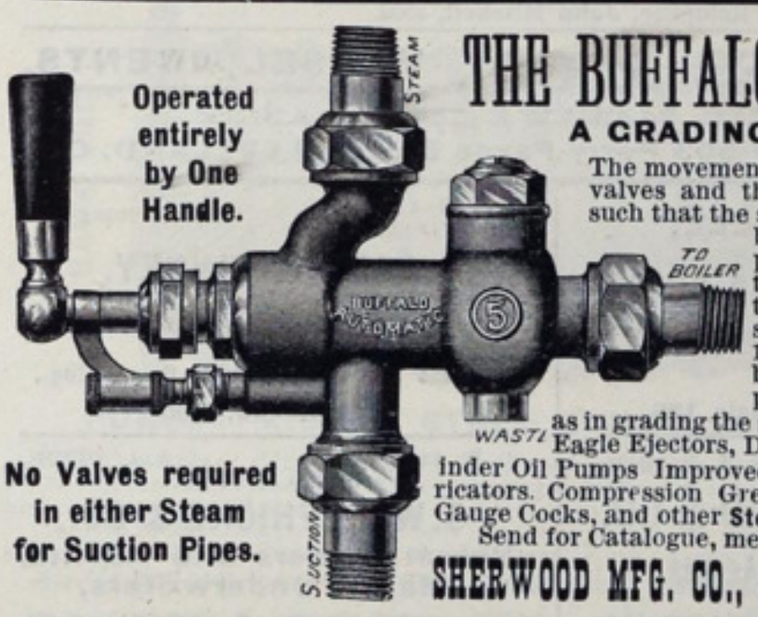

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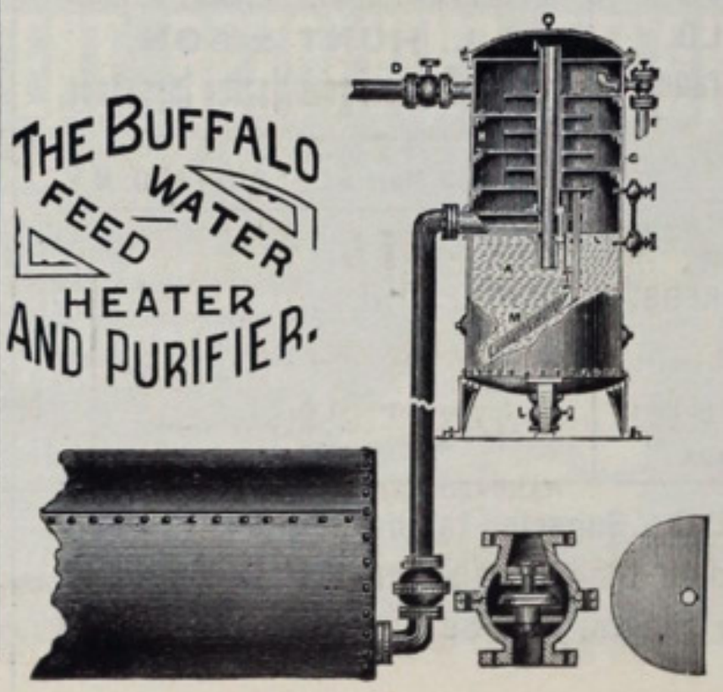

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C.—Feed pipe to boiler.
D.—Steam pipe.
E.—Water supply pipe.
F.—Check valve.
G.—Spray disks.
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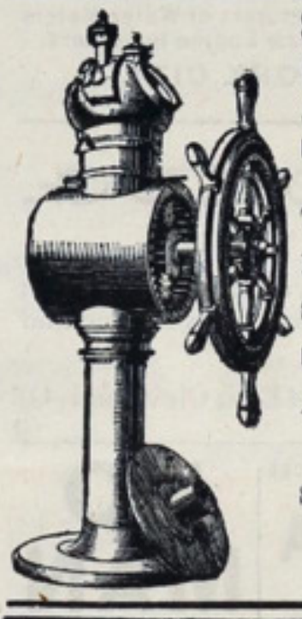

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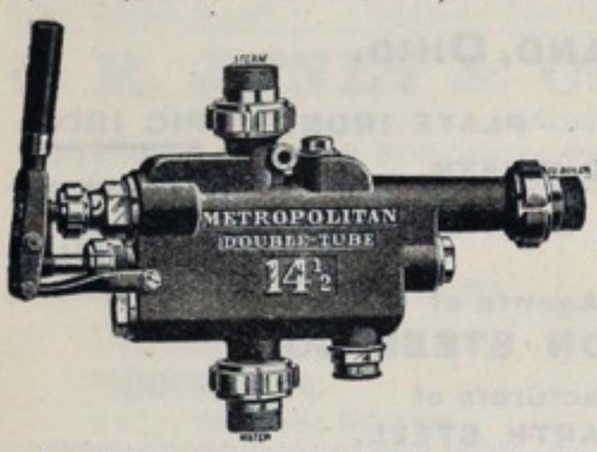

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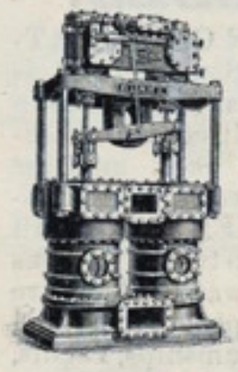

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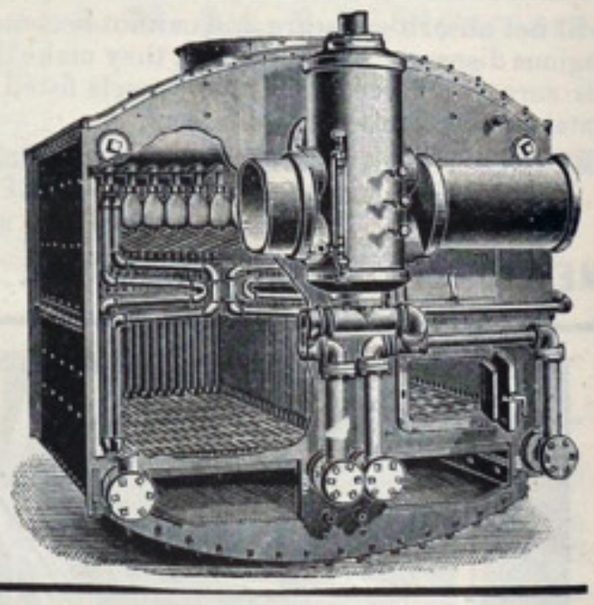

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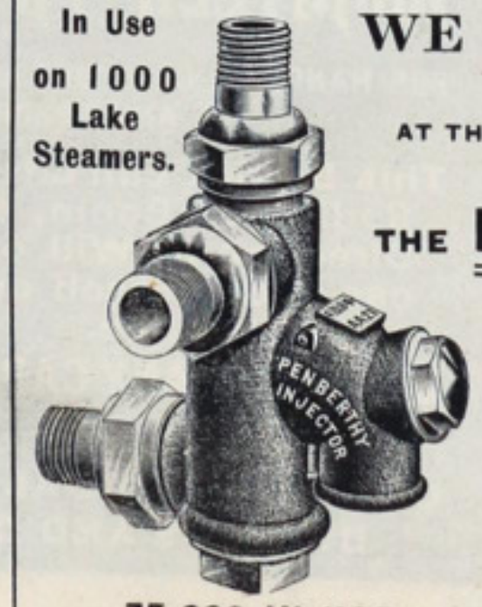

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